

MINISTRY OF
LABOUR AND NATIONAL SERVICE

Industrial Health
A SURVEY IN HALIFAX

A Report by
H.M. Factory Inspectorate and
Recommendations of the Industrial Health
Advisory Committee



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Introduction

The Minister of Labour and National Service appointed in 1955 a Standing Industrial Health Advisory Committee to advise him on measures to further the development of industrial health services in workplaces covered by the Factories Acts. The Minister is Chairman of this Committee and Sir Guildhaume Myrddin-Evans, Vice-Chairman. The membership includes persons nominated by the British Employers' Confederation, the Trades Union Congress, the Nationalised Industries, the British Medical Association, the Royal College of Nursing, and other organisations and bodies closely concerned with the promotion of industrial health. The full membership of the Committee is as follows:

Chairman	Rt. Hon. Iain Macleod, M.P. Minister of Labour and National Service.
Vice-Chairman	Sir Guildhaume Myrddin-Evans, K.C.M.G., C.B. Ministry of Labour and National Service.
Dr. T. Bedford, D.Sc., Ph.D.	Mr. G. H. Lowthian, M.B.E.
Director of the Medical Research Council's Environmental Hygiene Research Unit, London School of Hygiene and Tropical Medicine.	Member of T.U.C. General Council.
Mrs. I. G. Doherty, S.R.N., Industrial Nursing Certificate.	Mr. W. G. Mitchell.
Deputy Secretary, Royal College of Nursing.	Member of Council of British Employers' Confederation.
Mr. Frank Gilbert, O.B.E., M.Inst.T.	Dr. R. Nightingale, C.B.E., M.B., Ch.B.
Past Secretary of Nationalised Industries Group on National Joint Advisory Council.	President, Association of Certifying Factory Surgeons.
Professor W. Hobson, B.Sc., M.D., D.P.H., M.R.C.S., L.R.C.P.	Dr. L. G. Norman, M.D., B.Sc., M.R.C.P., D.P.H.
Head of the Department of Social and Industrial Medicine, University of Sheffield.	Chief Medical Officer, London Transport.
Mr. R. E. Huffam.	Mr. J. O'Hagan.
Member of Council of British Employers' Confederation.	General Secretary of the National Union of Blastfurnacemen, Ore Miners, Coke Workers and Kindred Trades.
Dr. J. A. L. Vaughan Jones, C.B.E., Ch.B., M.B., J.P.	Sir Alfred Roberts, C.B.E.
Member of Council of British Medical Association.	Member and former President of T.U.C. General Council.
Professor R. E. Lane, C.B.E., M.D. F.R.C.P.	Dr. R. S. F. Schilling, M.D., M.R.C.P., D.P.H., D.I.H.
Nuffield Professor of Occupational Health, Manchester University.	Reader in Industrial Health, London School of Hygiene and Tropical Medicine.
Secretary	Mr. W. W. Vinsen.
	Member of Council of British Employers' Confederation.
	Mr. E. S. C. Sams
	Ministry of Labour and National Service.

The Committee met for the first time on 18th March, 1955, and has now held nine meetings. The Committee has given considerable attention to the need for further work to determine more precisely the situation concerning medical and nursing services in industry. With the advice of the Committee the Minister decided that two pilot surveys should be undertaken, one of a particular locality and the other of a particular industry, for the purpose of obtaining detailed factual information on the situation and throwing light on the best ways in which industrial health services in factories could be further developed. For the first of these surveys the town of Halifax was chosen.

This booklet sets out the main findings of the survey, and the recommendations and suggestions of the Industrial Health Advisory Committee.

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1. The Halifax Survey

(i) ORIGIN AND PURPOSE OF THE SURVEY

The Industrial Health Advisory Committee of the Ministry of Labour and National Service at its second meeting on 19th May, 1955, recommended that the Department should carry out industrial health surveys which would assist in determining the need for improved health services. An important feature of these surveys would be to assess the extent of and future need for medical and nursing services and to examine ways in which they might be provided.

The Committee agreed that in the first instance two pilot surveys should be undertaken by H.M. Factory Inspectorate. The first should cover the factories in a particular locality and the second those in an industry with known health hazards.

It was later decided that the first of these pilot surveys should be carried out in the town of Halifax. Halifax has a population of about 100,000 and was selected for the wide diversity of its industries, and the variety of its factory buildings, including those of the older type, and because it was reasonably self-contained.

The objectives of this survey were to determine:

- (a) the existing situation in the town from the standpoint of industrial health;
- (b) the extent to which industrial health services were necessary in the town; and
- (c) how they could best be organised to suit the conditions in the town.

The value of surveys of this kind, and the suitability of the methods employed, would also be tested.

It was agreed that all factories in the town should be visited by a team of Factory Inspectors and information obtained about environmental conditions, specific factors affecting health whether known or new, the adequacy of precautions taken against health hazards in particular industrial processes and the extent and adequacy of medical and nursing services already provided.

(ii) LOCAL CO-OPERATION

A public meeting was held to launch the survey. The Mayor of Halifax agreed to arrange for the Council Chamber of the Town Hall to be made available and to preside at the meeting.

A Local Advisory Committee was formed and three meetings were held.

Throughout the survey the team received the utmost local co-operation and thanks are due to the Mayor (Mr. J. Nicholl, J.P.), the members of the Local Advisory Committee, the Leeds Regional Hospital Board, the Halifax Hospital Management Committee, Halifax Executive Council, the Medical Officer of Health, the Trades Council, the Chamber of Commerce, Halifax District Engineering Employers' Association, and the directors, managers and workers in all the factories visited.

(iii) SUBMISSION OF THE REPORT AND ITS CONSIDERATION BY THE
INDUSTRIAL HEALTH ADVISORY COMMITTEE

The Report of the Survey team was submitted in August, 1956. At its first meeting after that date the Industrial Health Advisory Committee considered the Report and decided to appoint a small Sub-Committee to examine it in detail and report back. The Sub-Committee was comprised as follows:

Dr. T. Bedford, Mrs. I. G. Doherty, Mr. Frank Gilbert, Dr. S. J. Hadfield, Mr. R. E. Huffam, Mr. G. H. Lowthian and Dr. R. S. F. Schilling.

As a result of this detailed study the Committee has formulated certain recommendations of a general character and has also suggested the lines on which some further action might be taken in Halifax to follow up the work done during the Survey.

The Report contains much information relating to particular firms which it would not be proper to publish. An account of the main findings of the Survey team is set out in the following sections of this publication and the recommendations and suggestions of the Industrial Health Advisory Committee are included in italics under the appropriate headings.

2. Industry in Halifax

(i) THE MAKE-UP OF INDUSTRY

Halifax is a town with a wide variety of industry, although many of the trades which are important sources of industrial illness such as lead works and chemical factories, and also many other important industries, such as boot and shoe making, cabinet making, vehicle building, etc., are virtually absent.

Table I shows the distribution of factories and workers according to industry groups. The two main industrial groups—Textiles and Engineering and Metal Goods—account for 322 out of 760 factories and for 18,808 of the 28,699 workers. In the Textile group over half are employed in worsted spinning and the rest in a variety of trades including woollen and worsted weaving, carpet and moquette manufacture, cotton spinning and doubling and jute and silk spinning. In the Engineering and Metal Goods Group machine tool making predominates with small groups or individual firms engaged on a wide range of engineering and associated products from boilers to washing machines, nuts and bolts to electric motors, sheet metal to foundry equipment. Next in order of importance comes the Food Industry with flour and sugar confectionery, biscuits and brewing, followed by Clothing which consists principally of fashion tailoring and industrial overall making. The other groups have under 1,000 workers in each.

(ii) NUMBER AND SIZE OF FACTORIES

All the factories in the town were visited. They numbered 760* with a total of 28,699 manual workers. Table II gives the distribution of factories in Halifax by size groups and compares the numbers in each group with the national figure. The

* In fact, 797 reports were prepared, it being convenient to prepare two or more forms for certain factories with more than one main industry.

most significant feature brought out by this table is the large number of small factories in which very small numbers of workers are employed. The 557 factories employing 25 and under had only 3,601 workers, and the 630 factories employing 50 and under only 6,315.

The size of factory varied widely with the type of industry. In some trades such as Motor Vehicle Repairs, Clothing, Bread and Flour Confectionery, Wood and Cork, Paper and Printing, the factories largely existed for servicing or to fulfil purely local domestic demands and were consequently rather small units. On the other hand, in Machine Tool Making, Worsted Spinning, Sugar Confectionery, the factories were producing for national and world markets and were consequently much larger. It must also be remembered that these figures relate to separately registered factories and not to firms. In a built-up area such as this, particularly where the terrain prevents further development on the original site, branch works have had to be started in many instances, and some of the principal firms had three or four separately registered factories.

TABLE I
Distribution of Factories and Workers according to Industry

<i>Industry</i>	<i>No. of factories</i>	<i>No. of manual workers employed</i>	<i>Per cent of Total</i>	<i>*Per cent employed Nationally</i>
<i>Manufacturing Industries</i>				
<i>Treatment of—</i>				
Non-Metalliferous Mining Products other than Coal	19	197	0.69	3.48
Chemicals and Allied Trades	17	179	0.62	5.34
Metal Manufacture	15	515	1.80	5.89
Engineering, Shipbuilding and Electrical Goods	128	6,131	21.36	21.31
Vehicles	53	603	2.10	12.36
Metal Goods not elsewhere specified . .	86	2,660	9.27	5.23
Precision Instruments, Jewellery, etc. .	9	393	1.37	1.49
Textiles	108	10,017	34.90	9.44
Leather, Leather Goods and Fur . . .	10	185	0.64	0.69
Clothing	70	1,913	6.67	6.43
Food, Drink and Tobacco	75	4,028	14.04	8.93
Manufactures of Wood and Cork . . .	103	750	2.61	2.94
Paper and Printing	33	453	1.58	5.72
Other Manufacturing Industries . . .	12	153	0.53	2.88
<i>Other</i>				
Gas, Electricity and Water	7	267	0.93	3.83
Miscellaneous Services	15	255	0.89	4.04
Total	760	28,699	100.00	100.00

* These figures are derived from the total numbers employed in each industry, and so include office staff and other non-manual workers who were not covered by the Survey. The comparison is thought, however, to be of some value for the present purpose.

TABLE II

Factories in size groups—Comparison with National figures

Size Group	Number of Factories				Number of Workers			
	HALIFAX		NATIONAL		HALIFAX		NATIONAL	
	In Group	Per cent of Total	In Group	Per cent of Total	In Group	Per cent of Total	In Group	Per cent of Total
1- 10	447	58.82	162,013	69.38	1,698	5.92	593,980	8.03
11- 25	110	14.47	32,090	13.74	1,903	6.63	528,624	7.15
26- 50	73	9.61	16,970	7.27	2,714	9.46	633,841	8.57
51- 100	60	7.89	10,305	4.41	4,668	16.26	758,435	10.25
101- 250	51	6.71	7,292	3.12	8,362	29.14	1,197,191	16.18
251- 500	11	1.45	2,843	1.22	3,682	12.83	1,017,086	13.75
501-1,000	7	0.92	1,233	0.53	4,349	15.15	881,638	11.92
Over 1,000	1	0.13	773	0.33	1,323	4.61	1,786,562	24.15
	760	100.00	233,519	100.00	28,699	100.00	7,397,357	100.00

3. Buildings

(i) THE MAIN TYPES OF BUILDINGS

The three main types of factory buildings were:

- (a) multi-storey mills—large mainly stone-built factories and warehouses of three or more storeys erected almost entirely for the textile trades in the nineteenth century;
- (b) two-storey factory buildings—a few old mills but generally the more modern types of industrial building, with some two-storey buildings of the stable and outhouse type; and
- (c) single-storey stone or brick buildings—mainly north-light roofed weaving sheds but some modern buildings.

In addition some small factories were housed in the stone buildings in the centre of the town which were mainly used for offices and shops.

(ii) GENERAL CHARACTERISTICS

(a) *Age and Construction*

Over 90 per cent of all industrial buildings were solidly constructed with walls and roofs of local sandstone. Even today new brick additions are often faced with stone to keep in character with local tradition.

There were some 75 multi-storey stone mills scattered throughout the borough and a further 20 warehouses in the lower part of the town. Roughly half of the workers were employed in this type of building. Almost all the mills and a great number of the single-storey sheds dated from the middle and latter half of the nineteenth century. A few substantial structures erected in the 1830's were still in use.

(b) *Rented Property*

Individual factory premises were often rented portions of large blocks of property. Problems of maintenance and development, the improvement of sanitary and washing accommodation and the installation of additional means of ventilation were often bound up with the fact that property was rented.

(c) *Availability of Buildings*

The availability of old industrial property at comparatively low rentals appeared to be a bar to the erection of new buildings. Despite all the handicaps of poor housing, it appeared that unless a firm was very successful in building up its capital reserves it preferred to keep down overheads by remaining in its old premises rather than embarking on new buildings at the high prices ruling today.

(d) *Shortage of New Sites*

There is a shortage of suitable level land for industrial development. An area for light industry adjacent to the post-war housing estates had been earmarked by the Corporation but at the time of the Survey no new factories had been built.

(iii) INFLUENCE OF BUILDINGS ON ENVIRONMENTAL CONDITIONS

Of the 797 buildings (or groups of buildings) surveyed, 81 were unsatisfactory from a structural point of view, e.g. they were dilapidated and no longer weather-proof. Most were single or two-storey buildings and they were mainly smaller works.

Old property, particularly when it was rented, usually had a low standard of decoration. In many old mills the walls and floors were saturated with oil. Wall finishes were often poor and the successive layers of limewash made preparation for painting expensive. Replastering was often desirable.

Sanitary accommodation in old buildings was frequently cramped and badly ventilated, without proper screening and an intervening ventilated space.

The multi-storey mill made the provision of suitable washing facilities near to the place of work expensive particularly the installation of the hot water supply.

On the credit side the solid nature of the structures gave good insulation against the extremes of climate even if it made the installation of additional means of ventilation difficult. Fortunately the buildings had large areas of open floor space so that overcrowding or congestion was unlikely.

The Industrial Health Advisory Committee recognised that the existence of sub-standard buildings was a general question to which greater attention should be paid. It is important to ensure that new building should be on the right lines and that environmental conditions should be improved in old buildings wherever possible.

On these matters consultations are proceeding between the Ministry of Labour and the Department of Scientific and Industrial Research on the most practical ways and means of making progress.

In connection with new buildings particular interest is attached to the current project being sponsored by the Midland Regional Board for Industry to stimulate research into factory design.

4. Environmental Conditions

(i) TEMPERATURE AND VENTILATION

(a) *Multi-Storey Mills*

Some of the worst conditions were found in multi-storey mills particularly in the textile trades because of the large floor areas and relatively low ceiling heights. Good side windows were provided but roof ventilators could be installed only at the topmost floors. Windows were rarely opened because of draughts and the dirty outside atmosphere. These conditions were at their worst in winter when all domestic and industrial chimneys were in use and the atmosphere was often humid, accentuated by the town's situation amongst the Pennine Hills.

In many worsted spinning mills and similar textile factories, conditions were made even more uncomfortable by a steady rise in temperature as the day advanced. This was due to a number of factors including:

- (1) Increased process heat from the plant aggravated by the recent changeover to individual motors. The overhead belt drive had its drawbacks, but it did give a limited amount of air movement.
- (2) Low mounted overhead electric lights which during the winter months had to be kept on throughout the day particularly near the centre of lower floors. The use of fluorescent lighting helps to reduce heat.
- (3) Overhead steam heating.
- (4) The absence of any control of the heating except from the boiler house, temperatures often becoming too high before any attempt was made to control them.
- (5) The theory held by some overlookers that a high temperature with high humidity gave the best spinning results.

(b) *Single-Storey Buildings*

Working conditions in single-storey buildings were often poor in winter because of unsuitable methods of heating, e.g. reliance on overhead steam pipes, and in summer from the fact that glass roofs were not set at the correct angle, with consequent overheating from the sun. Many of these buildings had no roof openings or those originally provided were sealed because of the poor state of the roof. These conditions were found in a number of different industries.

More unit heaters ventilated to the outside were needed. In this connection the provision of textile stockings, commonly seen in the cotton trade, to distribute the air evenly over a wide area, might be considered.

(c) *Special Processes*

In the 24 textile plants in which artificial humidity was produced conditions were generally satisfactory although in certain factories there was a tendency to try to secure the maximum degree of humidity. There was a need in many of these factories, as was demonstrated in several of the more up-to-date mills, to provide some form of mechanical ventilation incorporating air cleaning units; or, at least, to secure by baffles, louvres or hopper windows with side pieces, that natural ventilation could be maintained without causing draughts.

There were comparatively few hot processes where excessive radiant heat was a problem, but steamy atmospheres were found in a number of textile finishing plants and laundry washhouses and in some of the food processing plants. In the majority of such factories the problem had not been successfully tackled.

In several industries, notably foundries, nut, bolt and screw factories and certain woollen trades, atmospheric conditions were poor due to pollution by dust or fumes. In most cases the separation of processes would have been the solution but this might have entailed rehousing. Failing this, the improvement of local exhaust plants and the installation of plenum systems for general ventilation were desirable.

(d) *Smaller Factories*

The above comments are based on conditions found in the larger firms where the majority of workers are employed, but out of 201 undertakings covering 9,786 employees assessed as having unsatisfactory ventilation, 102 were factories employing up to ten workers with a total of 406 employees. In these small undertakings mechanical systems of ventilation, apart from local exhaust, were not generally necessary, but increased window opening space suitably baffled would have been desirable.

(e) *Means of Heating*

Means of heating were reasonably good, only 163 undertakings covering 2,364 workers being marked as unsatisfactory in this respect. One hundred and seven of these were small works with up to ten persons in each and 441 workers in all. Four hundred and forty-one factories relied on central heating systems (279 hot water and 162 steam), 185 on slow combustion stoves, 44 on electricity, 23 on gas, 21 on open coal fires, 67 on process heat and 16 had paraffin heaters or were in the open air. Despite the fact that the survey was carried out during an exceptionally cold and prolonged winter, there were very few instances where the heating was insufficient. The main criticism of heating arrangements was that they were unsuitable. In many of the larger works the steam and hot water pipes were placed overhead. This in the absence of unit heaters or fans to circulate the warm upper air tended to give rise particularly in shed buildings to the "hot head, cold feet" feeling particularly as many factories had stone-flagged or concrete floors.

Few factories relied on gas heating except where it was used in the process and only one example of a large factory heated entirely by electricity was found. This spinning mill worked a 24-hour day and it was found to be economical to use electricity in view of the reduced night charges.

Exposure to excessive process heat was found in only a few works such as foundries, bakehouses, confectionery works and wire drawing factories. It did not constitute a serious problem as most of the work at such processes was intermittent. An exception was the laundry trade where workers had to stand for long hours at presses and calenders.

From the Report the Industrial Health Advisory Committee concluded that proper supervision of heating and ventilation was often lacking. The duty of supervision should wherever practicable be the special responsibility of a particular person. More generally, standards of atmospheric conditions have in many cases been broadly established and their introduction should be encouraged to the fullest extent through an informed and co-operative approach in different industries.

(ii) WASHING FACILITIES

The Factories Act, 1937, does not lay down any specific standard of washing facilities but requires that they shall be adequate and suitable, and include soap and clean towels or other means of drying. The survey team adjudged that some 142 factories and departments with 10,454 workers had good facilities, 388 with 10,539 workers satisfactory and 267 with 7,706 workers unsatisfactory. The lowest standards were in the smaller workplaces. The food factories were outstandingly good.

Unsatisfactory facilities were found fairly evenly spread throughout the other groups with a tendency to provide better facilities where women were employed.

Over half of the workers were employed in the textile, clothing, food and other trades which are comparatively clean. A high proportion of the workers lived near the mills and went home for their midday meal. On the other hand new housing estates are further out from the town centre so that more and more workers had to make a journey to work and stay for meals, and good washing facilities were becoming more necessary.

The criteria applied were necessarily somewhat arbitrary. There was little evidence except in certain dirty processes that there was any demand from the workers for improved facilities, but on the other hand some evidence that where good facilities were available they were not used. This was sometimes due to poor siting of the accommodation. Where the washbasins were placed near the work, often in the open shop, as in some textile works, they were much appreciated.

The Industrial Health Advisory Committee takes the view that interest in the improvement of washing facilities should be stimulated, e.g. by further publicity directed at employers to provide better facilities as necessary and at workers to play their part in maintaining washing facilities and to make better use of them when provided. It is important that the siting of the facilities provided should be kept specially in mind.

(iii) CLEANLINESS

In some 573 undertakings covering 24,822 workers, cleanliness was considered satisfactory; in 224 with 3,877 workers, unsatisfactory. The worst conditions were found in the smaller factories.

(a) Wall Decoration

Since the war a great effort has been made to make all factories, but textile mills in particular, more attractive. Motorisation of individual frames has brought with it the removal of the forest of dark driving belts and the long lines of overhead shafting. At the same time walls, often previously saturated with oil and covered with layers of limewash, have been scraped, possibly replastered, and in most cases painted in cream and green. Machinery too has been streamlined by the provision of painted sheet metal end guards in place of the old drab cast-iron nip guards.

Some unsatisfactory premises will be found in most industry groups because standards of cleanliness frequently depend on the attitude of the individual occupiers, particularly in the smaller factories.

There were however some trades such as sugar and flour confectionery, food and drink, where high standards were necessary on account of the product and in fact only a very few small factories in those trades were found to be below standard. Similarly certain textile mills, particularly worsted spinning where there is very little "fly", and waste material is continually collected because of its value, had an exceptionally high standard.

The worst conditions were found amongst the dirty trades—foundries both iron and non-ferrous, and metal works. An exception to this was the clothing trade which is comparatively clean but had a relatively high proportion (roughly 25 per cent) of unsatisfactory workplaces.

(b) *Cleaning of Floors*

Apart from one or two larger works in the machine tool and food industries, the cleaning of floors was carried out by sweeping. In most engineering works labourers were employed for this work, which included the removal of scrap. It was often carried out superficially. In the textile trades the operator was generally responsible for the continual cleaning of her own alley (the working space between the frames), and the rest of the mill, gangways and stairways were swept once a week either by the operators or specially employed staff.

Vacuum cleaning was rarely employed and washing machines were only found regularly in use in one large machine tool factory.

The Industrial Health Advisory Committee recommends that more attention should be paid to the importance of creating good working conditions, with particular reference to cleanliness. Vacuum cleaning and attractive colour schemes could with advantage be more widely used.

(iv) SEATING

On the whole the work done in Halifax factories was not work which could be done seated. The principal exceptions were sugar confectionery, clothing, limited processes in the textile trades such as burling and mending, and some assembly work in electrical engineering, textile machinery and accessories, wire products, etc. For such work the larger firms had usually provided work seats, although many, particularly in the clothing industry, had only supplied stools.

In the textile trades generally the work involved tending looms and long rows of frames or "boxes". Occasional seating in the form of half waste cans, low wooden buffets or stools, straps stretched between pairs of looms, etc., was usually provided.

Whilst seats, although not always suitable, were generally provided for women, there was a feeling among some occupiers that men should stand, or if they needed to sit, then they were capable of finding their own box or stool. The attitude was most prevalent in the engineering trades.

A difference was noted in this matter between the larger and the smaller factory. The operator working at a conveyor in the large well-planned works would have nowhere to sit unless special provision was made, but in the small factory—the joinery, the vehicle repair works, the small engineering shops—some form of seat was invariably available although it was not specially provided.

H.M. Factory Inspectorate should continue to make industry aware that men as well as women need seats at work and that the present law on the subject makes no distinction between the sexes. The Industrial Health Advisory Committee recommends that research into the design of suitable seats for workers should be continued and industry informed of the results.

(v) AIR SPACE

Apart from a small number of instances where appropriate action was taken to remedy the situation, overcrowding was not found to be a problem. What caused more concern was the case of the large workrooms which because of their size and shape were not heated and ventilated satisfactorily.

(vi) NATURAL AND ARTIFICIAL LIGHTING

The object of all industrial illumination schemes is to provide light where it is required, sufficient in quantity and of a suitable quality so that the work can be done easily and efficiently. The Factories Act, 1937, lays down that lighting shall be sufficient and suitable and standards are prescribed for factories working over 48 hours a week or on shifts. This object seems to have been substantially achieved in Halifax.

(a) *Natural Lighting*

Generally natural lighting was good in single storey buildings and on top floors. In the multi-storey mills large side windows were invariably provided but the level of illumination fell rapidly towards the centre of the room and artificial lighting was constantly required, at least during the winter months.

Owing to the dirty atmosphere frequent window cleaning was necessary. This was often neglected.

(b) *Artificial Lighting*

In the machine tool and engineering industries many of the workshops had evidently had new installations during the War. The system most favoured was general lighting from mercury vapour or tungsten filament lamps with low voltage machine lighting. In some of the larger works the general lighting was obtained from angle lights mounted on the walls below the crane tracks rather than pendant lamps. This method of mounting appeared to be less satisfactory on account of increased glare. For assembly work fluorescent tubes were often preferred.

In textiles most of the large mills were being or had been relighted since the War. Many had adopted fluorescent lamps. These were particularly suitable owing to the comparatively low mounting heights in mill rooms, the absence of shadow, and, what is often important, their low thermal output.

In a number of smaller workplaces which had unsatisfactory standards, the chief reason why lighting was poor was not because it was insufficient but because the lamps were not screened against glare.

(vii) SANITARY ACCOMMODATION

There were only a few small factories without water carriage systems. But in 76 factories the accommodation was outside and workers had to cross an open yard to reach it. Whilst this was regarded as satisfactory in many trades, where the workers (mostly men) wore heavy clothing, it was not accepted as providing suitable accommodation in hot trades such as baking or in the lighter trades, e.g. clothing, where women were employed.

The main general criticism was that in the older mills the accommodation was often cramped, sometimes through a belated effort to introduce an intervening ventilated space. Frequently artificial lighting was not provided and ventilation was poor. A greater effort was needed to modernise the accommodation and to introduce regular daily cleaning.

(viii) FLOORS

A feature peculiar to this district is the use of heavy stone flags, particularly for ground floors and bottom floors in multi-storey buildings. If in a reasonable state stone flags are no worse than concrete. They are generally evenly laid without open

joints. The effect of standing for long periods on such floors could not be assessed, but in most factories, e.g. weaving sheds, textile finishing factories, machine shops, etc., duck boards were provided. In textile factories, particularly spinning mills, there were many excellent hardwood strip floors.

(ix) NOISE

Occupational deafness amongst boiler riveters is a known hazard. Apart from this there were no trades with a known hazard arising from noise.

Among exceptionally noisy processes noted, which might be the subject of further enquiries, were sheet metal working; recombining, cone drawing, and gilling operations in the worsted spinning trade; weaving; iron founding; confectionery wrapping where vibratory feeders were used; and handling metal crates in bottling plants.

It is the view of the Industrial Health Advisory Committee that the problem of noise in industry is a national one. The realistic approach to the problem is to identify and study those particular cases where excessive noise is liable to affect the health of workers adversely.

(x) OVERALL ASSESSMENT OF ENVIRONMENTAL CONDITIONS

Environmental conditions were good in 108 workplaces with 6,399 workers, generally satisfactory in 490 with 17,608 workers, and unsatisfactory in 199 with 4,692 workers. The latter figures expressed as percentages account for 25 per cent of the workplaces and 15 per cent of the workers. It appeared therefore that on the whole the smaller workplaces were worse than the larger. Examination of the assessments for those where up to ten persons were employed showed that washing facilities, cleanliness, lighting and temperatures were the worst features, whereas for all factories ventilation was by far the most unsatisfactory.

On considering the steps to be taken to improve conditions there is no doubt that washing facilities, in most cases cleanliness, and certainly lighting, could far more easily be remedied than ventilation, which in many cases required structural alterations or the installation of expensive plants.

5. Canteen and Meal Facilities

Only a small minority of factories had unsatisfactory canteen or meal facilities.

There were certain undertakings where the number of women staying on the premises for the midday meal seemed sufficient to make the provision of a messroom highly desirable.

6. General Assessment of Layout and Efficiency of Plant and Machinery in relation to the Health of the Worker

After careful consideration the survey team came to the conclusion that little useful purpose could be served in tackling this most complex subject unless each process was dealt with separately. This would have taken far too long and could not be undertaken in a general survey.

It was comparatively easy in practice to record the occasional absence of lifting tackle or other mechanical lifting appliances; the crowding together of machinery, e.g. in textiles where in some processes standards of spacing have been laid down; or to note poor layout due to the type of building in use, e.g. multi-storey buildings or floors on different levels (a common feature in Halifax due to the hilly nature of the district); but in all cases it was difficult to assess the effect, if any, of such factors on the health of the workers. Many of the matters are of course dealt with under other headings, e.g. under Buildings or Environmental Conditions.

Some of the more obvious examples of the possible effects of layout on the health of workers were observed in foundries (both ferrous and non-ferrous) and in machine tool factories where fettling and fine finishing of castings were carried on in the open shop and the dust arising from the process was discharged into the general atmosphere of the factory.

The crowding together of textile machinery though inadvisable from the point of view of the safety or the comfort of workers, did not have any apparent effect on general health.

Work where the workers' movements are dependent on the speed of the conveyor or plant was not encountered to any great extent except in the packing of sugar and flour confectionery. Here again no evidence of ill effects was available.

7. Occupational Health Hazards

(i) INTRODUCTORY

Halifax is not representative of certain industries which give rise to important and serious health risks. The major industry, textile spinning and weaving, is, in a relative sense, an unimportant source of health risks. In the result particular health hazards were few and not sufficiently concentrated in the area to form a basis for conclusions. No new or previously unsuspected health hazards in industry were brought to light.

(ii) DUST AND FUMES

A number of examples of dusty processes were noted: work in brick, silica stone and fireclay; foundry processes; certain preliminary processes in the machine tool industry and the operation of boiler scaling. The use of toxic solvents, usually trichlorethylene, was widespread. These substances were found in general to be used only occasionally and in small amounts, but it could not be assumed that there was complete safety because of this.

(iii) OTHER FACTORS INFLUENCING HEALTH

Work involving lifting heavy weights was generally confined to the wool warehouses and bottling stores. Considerable use was made of lifting aids and no example was met of heavy weight lifting by women and young persons. It may be of interest also to mention the long hours of work including travelling of a considerable number of women textile workers who travelled long distances to and from work in transport supplied by the employers. Some concern had been expressed about the effects of this travelling on the health of such workers but no evidence was found of any deleterious effects. The workers concerned had, in many cases, been offered hostel accommodation in Halifax but preferred to travel daily.

It was found that on the whole health risks were rather less prominent in the smaller factories. Two considerations were in mind in forming this judgment:

- (a) in the small units processes were often intermittent and did not employ a man all his time as they did in the larger factories;
- (b) a great many of these small establishments were factories only in the legal meaning of the term, and were not what is normally thought of as a factory. They included such undertakings as small joiners shops, radio and television repair workrooms and so on.

A general survey of the kind carried out in Halifax is not the appropriate way of investigating suspected or possible hazards. This is primarily a matter for consideration within the context of field investigation and research. The Committee noted, however, the widespread use of industrial solvents which appeared to reveal a possible hazard and commented on the lack of positive information about actual dust or fume concentrations in atmosphere, especially in small establishments. It was noted with satisfaction that the Ministry of Labour and National Service had made a point of making detailed dust counts in the course of the survey of the pottery industry being undertaken in Stoke-on-Trent. The Committee asked that there should be a general review of the arrangements for carrying out sampling of atmospheres in those sections of industry where dust fume or gas is thought to be a hazard. This review is being made.

8. Development of Co-operation between Management and Workers in considering Industrial Health Questions

The Industrial Health Advisory Committee believes that the survey as a whole emphasised the need for much more co-operation between management and workers in the promotion of industrial health. The development of this co-operative approach, which generally is not as good for industrial health as it is for accident prevention, is now being considered by the Ministry of Labour and National Service in consultation with the Industrial Safety Sub-Committee of the National Joint Advisory Council.

9. First-Aid

(i) AVAILABILITY OF INDIVIDUALS WITH FIRST-AID TRAINING

It is only where more than 50 persons are employed at any one time that a person suitably trained in first-aid is required by law to be in charge of a first-aid box. Where more than 150 workers are employed, additional boxes each under the charge of a named first-aid worker are required for each 150 workers or fraction thereof.

The most serious point brought out by the survey was that an appreciable number of factories employing more than 50 workers did not have any identified person with first-aid training. The second observation is that although some factories had excellent arrangements in force for training first-aiders there seemed to be an overall insufficiency of trained persons available.

In a considerable number of factories the first-aid arrangements were regarded as unsatisfactory. The points particularly noted were inadequate stocks of first-aid requisites, use of materials or techniques considered unsuited for first-aid or simple treatment and especially, neglect of elementary precautions to ensure cleanliness in materials used and the method of using them.

A description of a first-aid box and contents as commonly found would be this: The box, which would tend to be somewhat dirty rather than clean, would contain an assortment of roller bandages; a partially used open roll of surgical lint (the outer layer or two of which would be decidedly dirty); a partially used roll of adhesive plaster; and a tourniquet. A few sterilised wound and burn dressings in the various prescribed sizes would probably be available, some opened. Almost certainly there would be a reasonable stock of adhesive wound dressings with an even chance that these would be in the form of a continuous strip dressing and not of individual dressings. A choice of antiseptics would be provided, including a proprietary one and acriflavine lotion or emulsion. Eye drops commonly in two varieties labelled "Factory Eye Drops No. 1" and "Factory Eye Drops No. 2" and sal volatile would also most likely be present. Finally, the average box might well contain a bottle of aspirin tablets, a patent cough mixture or similar medicament, probably a record of treatments but no instructions on how to carry them out (Form 923). The name of the person in charge would not be displayed, but he would be well known and in a small factory this omission would not be of much moment.

In many factories a "strategic reserve" would be revealed, consisting of a liberal stock of roller bandages, rolls of lint, tins of adhesive plaster and even additional sterilised dressings. These, it would be explained, were kept locked up as it had been found that stocks in a first-aid box soon disappeared.

The above description is a general overall impression. In practice, almost without exception, even the smallest factory had first-aid provision of a sort. While some boxes were poorly equipped and dirty, others were clean, with contents approximating to the requirements of the Factories Act.

In all classes of factory there was a marked dislike for the small sterile finger dressings in the treatment of minor injuries. Objections included their bulk and clumsiness and the speed with which they became soiled. The adhesive wound dressings were also subject to criticism, mainly because of poor adhesion to the skin. This might have been the result of insufficient skin cleansing or application while the skin was still damp after cleansing. The waterproof dressings were particularly criticised mainly because they soon came off in contact with oil against which they are not claimed to act as a protection. The recently introduced porous plastic variety was increasingly encountered, but it was too early to judge whether this would overcome these objections.

The type of dressing favoured was one made up by the person providing treatment and compounded of a piece of lint medicated with antiseptic and fixed either with a roller bandage or much more adhesive than found in prepared adhesive wound dressings. The prepared adhesive dressings were second in order of popularity.

For other than minor injuries a quite different picture emerged. These, after administration of first-aid in the factory, were invariably sent by private car, or

ambulance if sufficiently severe, to the Casualty Department of the Infirmary. Great use was made of this service by Halifax factories. It is particularly for the first-aid treatment of such injuries that the trained first-aiders is required, but for the minor works-treated injuries it is doubtful if a detailed knowledge of first-aid is of as much value as training in good dressing technique such as might be given by a visiting nurse.

(iii) THE TRAINING OF FIRST-AIDERS

Factories employing up to 50 are not required to have a person trained in first-aid in charge of the first-aid box. In over 60 per cent of the factories employing more than 50, little if any thought had been given by management to the training of a sufficiency of first-aid workers. In too many cases it was largely a matter of luck rather than planning that first-aiders were available.

It is equally doubtful whether management had given the attention required to the periodic refresher training of the first-aiders.

The subject of First Aid in factories is one to which the Industrial Health Advisory Committee attaches considerable importance. Having heard an account of recent inter-departmental discussions on the subject, the Committee advises that action designed to improve the existing situation relating to first-aid in factories is necessary under the following heads: advice on method of treatment set out in the official leaflet included in first-aid boxes; the contents of first-aid boxes; maintenance of the boxes in good order; training of first-aiders and the recruitment of first-aiders.

10. Existing General Health Services

(i) INTRODUCTION

In any assessment of needs for industrial health services account must be taken of the health services already provided, particularly those available for industrial workers, under the provisions of the National Health Service Act, 1946. The National Health Service Act broadly provides its services through three channels:

- (a) The hospital and specialist and blood transfusion services through Regional Hospital Boards;
- (b) Vaccination and immunization, maternity and child welfare, home nursing and domiciliary midwifery, after-care of the sick, health visiting, domestic help and ambulance services by the Local Health Authorities (County Councils and County Borough Councils); and
- (c) general medical and dental services, pharmaceutical and supplementary ophthalmic services by Executive Councils for the areas of the Local Health Authorities.

(ii) REGIONAL HOSPITAL BOARD FACILITIES

The Royal Halifax Infirmary with 301 general beds and the Halifax General Hospital with 425 general beds (including maternity) were available. The Northowram Hall Hospital with 90 beds for treatment of chest diseases and 18 beds for infectious diseases cases and the Shelf Sanatorium for tuberculous patients were also available for these special categories.

Accommodation for other non-industrial special categories including the mental defective, the aged and chronic sick and children's beds for long stay cases were also available in the town or nearby.

Out-patient clinics were held at the two General Hospitals referred to above. According to the nature of the consultation, appointments could be made immediately, or, exceptionally, might entail delays of up to six weeks.

All casualties were dealt with at the Royal Halifax Infirmary except that an arrangement existed to send head injuries to the General Hospital on alternate weeks. Although at times there was heavy pressure on the casualty department at the Infirmary, there was no real difficulty in treating all industrial accidents.

A special scheme had been prepared for dealing with major accidents including an arrangement for sending mobile first-aid equipment to the scene of the accident and making use of voluntary assistance.

Including student nurses, there was a total of 285 whole-time and 78 part-time female nursing staff on 31st March, 1956, employed in hospitals in the Halifax area and 37 whole-time, and one part-time, male nurses.

Eighty four doctors or dentists held appointments at hospitals in the Halifax area, ranging from full-time services to availability on request. Thirty-one, mostly junior staff, were full-time. Consultants were available in all the important branches of medical practice.

Full X-ray facilities were provided at the Royal Halifax Infirmary and the Halifax General Hospital. More work was done at the former on account of the large number of casualties treated there.

There was a well-equipped pathological laboratory at both hospitals, under the direction of a consultant pathologist.

A full range of physiotherapy service was undertaken at both hospitals. At times, the service had to be restricted on account of the difficulty in recruiting a full establishment of physiotherapists.

Day to day contact was maintained between the hospital staff and the Disablement Resettlement Officer of the Ministry of Labour and National Service. There was a rehabilitation and resettlement committee which met as occasion demanded. The Employment Exchange Manager of the Ministry of Labour and the Disablement Resettlement Officer, as well as representatives of industry and the hospital almoners, served on this committee.

Surveys have been carried out by a Mass Radiography Unit in Halifax each year, the proportion of time allowed over each cycle of two years being approximately two months in one year, and one month in the next. The surveys, in addition to dealing with priority groups decided upon by the Regional Hospital Board, also offered facilities for examination of industrial groups on request, and public sessions.

A blood transfusion service maintained blood banks at both principal hospitals. Additional supplies were made available when required as well as dried plasma.

Cases requiring plastic or thoracic surgery were referred to specialist units in Bradford hospitals for necessary treatment. Injuries to the jaw and face might, if required, be treated at the Maxillo-facial Unit at Leeds. A Regional Burns Centre was being planned at Pinderfields Hospital, Wakefield.

(iii) SERVICES ADMINISTERED BY THE LOCAL HEALTH AUTHORITY

The functions of the Local Health Authority under the National Health Service Act included among others provision of an Ambulance Service, the prevention, care and after-care of sickness in the home, health visiting, home nursing and domestic help. The Ambulance Service was always at the disposal of industry for accidents. No particular conditions were attached with respect to the use of ambulances. There were eight ambulances, two ambulance sitting cars and one sitting-case car.

The establishment of Health Visitors in Halifax was 1 Superintendent and 11 Health Visitors, the present complement amounting to 1 Superintendent, 9 Visitors and 2 Assistant Nurses. There were 17 full-time District Nurses (3 men and 14 women) and 1 half-time; their duties were general nursing.

None of the above had any special duties in industry as such nor would there have been enough time on the present basis for District Nurses to attend to industrial needs.

There were 10 full-time and 36 part-time domestic helps employed by the Local Health Authority.

Help was given under Sec. 28 of the National Health Service Act in the receiving of convalescent treatment by industrial workers in order to assist them in returning to work.

Under the Factories Act, 1937, the Medical Officer of Health is responsible for the inspection of factories in relation to the following matters: cleanliness, overcrowding, temperature, ventilation, and drainage of floors, in factories where mechanical power is not used; and sanitary conveniences in all factories.

In addition, aspects of the Public Health Act and the Food and Drugs Acts had direct reference to community industrial health. All types of bacteriological examinations were available at the Public Health Laboratories at Bradford and Wakefield.

(iv) SERVICES ADMINISTERED BY THE EXECUTIVE COUNCIL

The Executive Council is the authority administering the provision of general medical services, dental services, pharmaceutical services and supplementary ophthalmic services (provision of spectacles, etc.).

There were 40 doctors in practice as principals in the borough, 4 of whom held part-time industrial appointments and a fifth similar appointments in commerce.

No undue difficulty arose in the general practitioners' obtaining direct radiological and pathological reports and examinations.

There were 18 dental practitioners with 3 assistants practising at Halifax. One dental practitioner held a part-time appointment in industry.

The supplementary ophthalmic service was available to all factory workers and others simply by making an appointment with the ophthalmic medical practitioner or optician of their choice at a time convenient to the worker. If it was found that hospital treatment was required, the patient was referred to his general medical practitioner who, in turn, recommended him for treatment through the Hospital Eye Service. The hospital in this case would, of course, have carried out the treatment and sight test and the supply of glasses or, if preferred, the patient could have gone to any dispensing optician for the dispensing of the glasses.

II. Industrial Medical and Nursing Services

(i) MEDICAL SERVICES

(a) *Voluntary*

In addition to the 4 Halifax doctors who held one or more part-time appointments as factory medical officers, doctors employed elsewhere by certain national undertakings periodically visited, or were available at, three Halifax branches of those undertakings.

The individual undertakings at which supervision was exercised were not necessarily the largest factories in the town but included some of the medium and smaller ones.

A few other factories in Halifax had, however, some arrangement with a local practitioner, e.g. an arrangement for a doctor to be consulted in the event of some special health problem arising, or to examine selected personnel for pension purposes or those who had been off sick for a lengthy period. The feature common to all was that no fixed routine visits were paid by a works doctor.

No Halifax factory regularly employed a doctor for more than two hours per week. The aggregate of hours spent per week by all doctors in the exercise of medical supervision in Halifax factories was not more than 15.

The most striking feature in the overall picture of factories in Halifax with medical supervision was the importance of those factories producing articles for human consumption. This industry accounted for 3,000 of the 5,000 workers covered by medical supervision. There were no doubt special reasons why this measure of supervision had come about and it appeared that these manufacturers had been alive to the special advantages accruing from a supervision of those handling foodstuffs both with the object of maintaining the purity of the product and because these industries were particularly prone to have a dermatitis problem.

Much excellent work was done by medical services in Halifax factories. The general impression gained was, however, that the supervision tended to be a clinical one, obtained by initial or subsequent medical examinations of employees with supervision of first-aid, while observations on environmental conditions and of individuals actually at work, with advice based on such observations, were much less in evidence.

(b) *Statutory*

Statutory examinations and re-examinations of young persons on entry to industry and annually thereafter until the age of eighteen were made by the Appointed Factory Doctor. At certain establishments the Appointed Factory Doctor made examinations required by Regulations applying to particular trades but the number of workers so examined was small.

Statutory supervision was also provided by the Pneumoconiosis Medical Panel of the Ministry of Pensions and National Insurance for certain workers employed in working siliceous material.

(ii) NURSING SERVICES

There were 9 full-time State Registered nurses employed in Halifax factories and 3 State Enrolled Assistant nurses. In addition, nurses employed by undertakings outside Halifax visited branches in the town from time to time.

The 23 factories with nursing services were found in the electrical engineering and machine tool, textile, textile accessory, plastics and flour and sugar confectionery industries and employed a total of 7,200 workers. In seven of these factories medical services were also provided.

The work carried out by these nurses varied from factory to factory, ranging from purely professional work in the Ambulance Room in some factories to such work with sick visiting and administrative duties of a welfare character, including a measure of advice on environmental conditions, in others.

In certain factories the Survey team was much impressed by the work being carried out by these nurses and the position of respect and prestige they enjoyed both with management and workers.

(iii) SUMMARY OF EXISTING POSITION

The facts regarding medical and nursing services as they existed at the time of the survey in factories in Halifax, can be briefly summarised as follows:

(a) Number of doctors and nurses in industry:

	Doctors	Nurses
Full-time	—	12 (9 S.R.N., 3 S.E.A.N.)
Part-time	4	—

The doctors altogether served 21 factories employing about 4,500 workers. No doctor was employed for more than two hours per week in any one factory. The total number of hours of employment of all these doctors in industry was not more than 15 per week. The full-time nurses served 23 factories employing about 7,000 workers.

(b) There were 19 factories with 250 or more workers. Nine such factories had medical services. Eight of those nine factories and five of the others had nursing services.

(c) It is believed that 24 of the 40 general practitioners in Halifax (including the four already doing part-time work) would be willing to take up part-time appointments in industry.

12. Scope for Increased Industrial Medical and Nursing Services in Halifax

The Industrial Health Advisory Committee recognises that difficult problems of organisation are involved in the development of medical and nursing services in factories, especially the smaller ones. Experiments designed to throw light on these organisational problems are being carried out in certain towns, e.g. Slough, Harlow, Newcastle-upon-Tyne. Any experiment undertaken in Halifax on the basis of the survey findings should be designed, so far as possible, to supplement and not duplicate other experiments.

A consideration which must be kept in mind is the availability of medical and nursing manpower. While the survey report suggests that general practitioners in Halifax would be able to undertake some extra work on a part-time basis in providing services in factories, there is a view that there is some danger of detriment to the National Health Service in the area in a too-rapid development of medical and nursing services in industry. The general view of the Committee, however, is that there is no reason to think that the speed of development is likely to be such as to produce any serious difficulties under this head for the time being.

Against this background the Industrial Health Advisory Committee has considered the steps which might be taken to encourage the further development of medical and nursing services in the factories in Halifax.

The right plan would seem to be to proceed by stages. The first stage should be to approach the occupiers of those factories in Halifax where 250 or more workers are employed with a view to interesting them in the advantages of the provision or the extension of medical and nursing services. In making such an approach it will be necessary to ensure that both employers and workers are aware of the benefits to be expected from these services. The Industrial Health Advisory Committee considers that it should be pointed out that the general aim of such services is to improve supervision of the health of workers. Stress could suitably be laid on the following particular elements in such a service:

- (i) interview and medical examination of workers in the factory;*
- (ii) advice on the health aspects of the working environment and on problems arising therefrom;*
- (iii) supervision of arrangements for first-aid and emergency treatment.*

